

MISSOURI DEPARTMENT OF CONSERVATION



May/June 2020

Xplor



MEET THE
BEETLES
THESE ICONIC
INSECTS ROCK THE WORLD

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Lizard or salamander? Missouri's only newt can pass for both.
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No other animals on Earth are more successful than these insects.

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We Want to Hear From You!

We'd love to know what you think about Xplor.
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Xplor (ISSN 2151-8351) is published bimonthly. It is a publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: PO Box 180, Jefferson City, MO 65102.) Subscription free to Missouri residents (one per household); out of state \$5 per year; out of country \$8 per year. Please allow 6-8 weeks for first issue. Notification of address change must include both old and new address (send mailing label with the subscriber number on it) with 60-day notice. Preferred periodical postage paid at Jefferson City, Missouri, and at additional entry offices. **Postmaster:** Send correspondence to *Xplor Circulation*, PO Box 180, Jefferson City, MO 65102-0180. Phone: 573-751-4115, ext. 3856 or 3249.

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ON THE COVER

Fiery Searcher

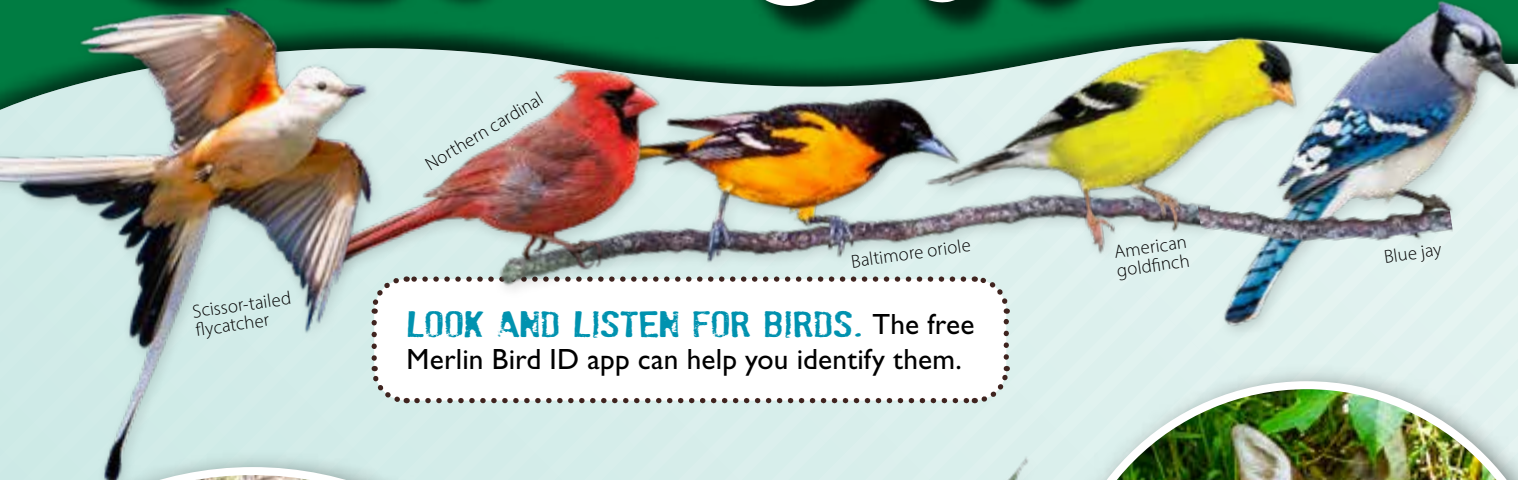
by © Harmonia101 | Dreamstime.com

A white-faced ibis wades through the marsh muck searching for insects, snails, and crayfish to munch. Ibises are rare visitors to Missouri but sometimes show up in May and September.

by Jim Rathert

GET OUT!

FUN THINGS TO DO
AND GREAT PLACES
TO DISCOVER NATURE



Scissor-tailed flycatcher

Northern cardinal

Baltimore oriole

American goldfinch

Blue jay

LOOK AND LISTEN FOR BIRDS. The free Merlin Bird ID app can help you identify them.



PUT ON YOUR WATER SHOES AND GO CREEKING.

Wade, skip stones, and count how many critters you see under the water, on the gravel, and in the air.



HAVE YOU SEEN THIS FLOWER?

Jack-in-the-pulpit blooms in the woods in May.



DEER FAWNS ARE BORN

through June. If you spot a spotted fawn, take a quick pic, and then leave it alone. Its mom will be back for it soon.



BACKYARD CAMPING IS FUN! Listen to the night sounds and watch for falling stars.

WHAT IS?

DON'T KNOW?
Jump to Page 20 to find out.



- ① I look like a mass of white foam.
- ② But these bubbles are actually my home.

- ③ They will keep me safe from my foes ...
- ④ ... until I can fly on my own.

Into the WILD

wildlife-friendly farm

Farms don't just grow crops and cattle. They also grow bees, butterflies, and all kinds of other animals.



What Happened Here?

If you get too close to a **killdeer's** chicks, mom or pop will pretend to have a broken wing. The parent will thrash around and drag its wing pitifully, hoping you will follow it away from the babies.



Eastern kingbirds are named for the "crown" of orange or golden feathers on top of their heads. But this colorful patch is usually seen only when a kingbird is angry.

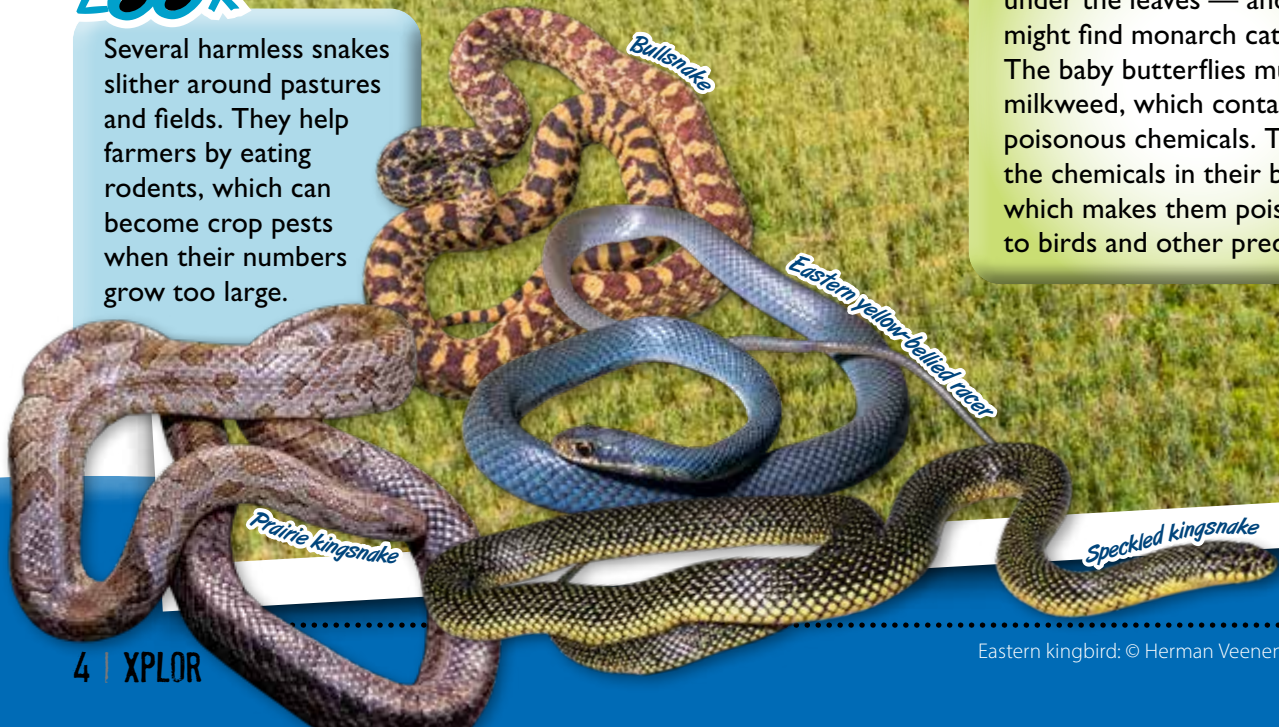


Take a Closer Look

Search milkweed plants carefully — especially under the leaves — and you might find monarch caterpillars. The baby butterflies munch milkweed, which contains poisonous chemicals. They store the chemicals in their bodies, which makes them poisonous to birds and other predators.

LOOK

Several harmless snakes slither around pastures and fields. They help farmers by eating rodents, which can become crop pests when their numbers grow too large.





Bumblebee



Sweat bee



Leafcutter bee



Mason bee



Long-horned bee

LOOK

Planting wildflowers along field edges attracts flower-friendly insects like bees. How many of these buzzy, hard-working insects can you find?

LOOK

Unplanted fields are a great place to watch for **wild turkeys** and northern bobwhites. Adults visit the fields to take dust baths. Chicks come to snap up insects to eat.



Listen

Coyotes usually begin yapping and howling right after sunset. Although it sounds spooky, there's nothing to fear. It's how coyotes talk to each other. A coyote might howl to tell other coyotes, "I'm lonely," "Stay away," or "Let's find some rabbits to eat."

Did You Know?

Newly hatched **northern bobwhites** are barely bigger than a bumblebee. And even though they weigh only as much as six small paper clips, the little fluffballs can scurry around and catch insects soon after exiting their eggs.





Eft You Only Newt...

by Bonnie Chasteen

... you'd be amazed by this
shape-shifting salamander's
complicated life cycle!





Red eft phase

As a land-dwelling eft, the central newt looks like a lizard. It has rough skin that is toxic to predators, but it won't hurt you.

Also a
Central newt

Missouri has 19 kinds of salamanders. These amphibians are related to frogs and toads. Most salamanders look like a stumpy cross between a frog and a lizard.

Some kinds of salamanders are known as newts, and Missouri has only one kind — the central newt. It looks kind of like a tadpole.

Until it's an eft. And then it looks like a lizard.

Turn the page to learn how things got so complicated.



Newt phase

Like frogs, toads, and other amphibians, newts need a watery environment for some part of their lives.

Central Newt Life Cycle

1

The central newt starts and ends its life in the water.

As a baby and then again as an adult, the newt has webbed feet and a flattened, finlike tail to help it swim. Most salamanders have longer, more rounded tails and strong toes to help them dig in the dirt.

2

When the baby newt starts to become a land-loving red eft, it loses its external gills, leaves its watery cradle, and develops the rough, toxic skin it needs to survive on land.

For the next two or three years, the red eft hides in leaf litter, under

6

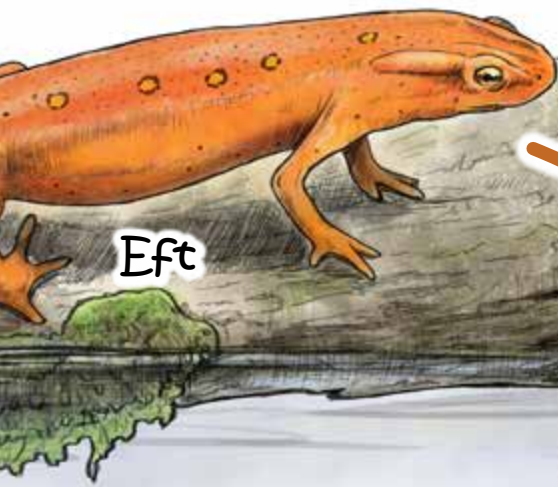
As summer grows hotter, the larval newts transform into efts. Why? Because the adults will eat them if they stay in the water.

Singly and in groups, they crawl into the cooler, shady woods. There, they will find a cozy blanket of leaves or a nice rotten stump in which to spend the fall and winter. A few years will pass — until they get the urge to go back to the water and to their lives as newts again.

Newt
(baby)

Image courtesy of Sarah Dahlinger, www.sarahdahlinger.com

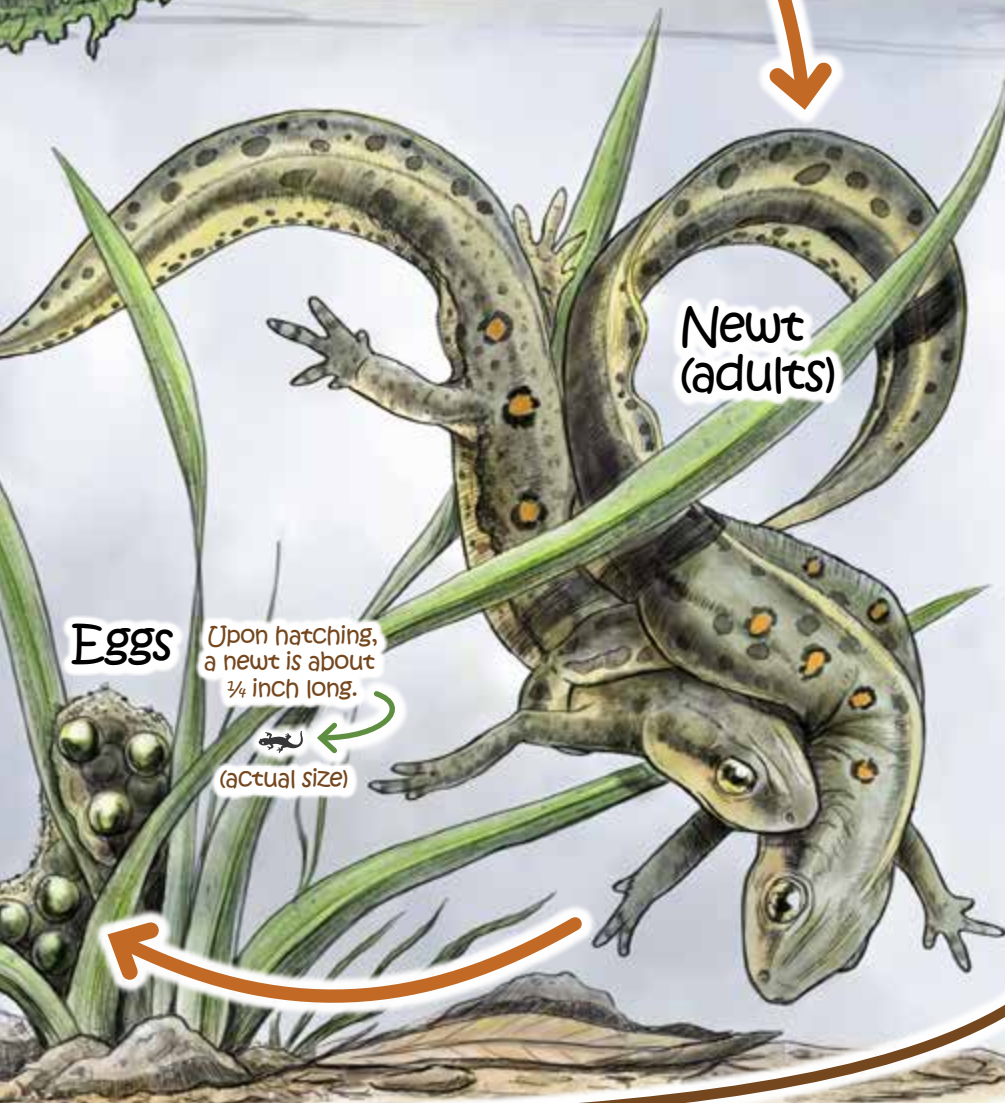
logs, or in rotten stumps. There, it eats tiny springtails and other small critters. Its red skin sends a warning to any predator that wants to eat it to *back off*! The red eft's skin is poisonous enough to kill a mouse but won't hurt humans.



Eft

3

Eventually, the red eft gets the urge to return to the water. There, its skin softens and develops a slimy, protective coating. It also changes color from red to olive green, but the adult always keeps the bright orange spots of its eft stage. Its tail also becomes flattened and finlike again, and the toes become slightly webbed.



Newt (adults)

Eggs

Upon hatching, a newt is about 1/4 inch long.

(actual size)

4

Adults breathe by rising to the surface for air. During winter, their thin, porous skin absorbs oxygen from the water. When it's time to start a family, the male and female newts perform an elaborate, swimmy, tale-swishing dance.

5

The female lays hundreds of eggs one at a time on submerged plants from May through June. Soon, tiny larvae hatch to feed and grow in the water until August.



Beetlemania!

Some are mighty. Some are tiny. Some are dull. Some are shiny. Beetles are everywhere, and they come in more sizes, shapes, and colors than any other animal on the planet.

by Matt Seek

Meet the Beetles

Imagine you could stuff one of every kind of animal into a bag. For every four times you reached inside, you'd likely pull out a beetle. Biologists have named 250,000 to 400,000 kinds of these hard-shelled insects. In fact, there are more beetle species on Earth than any other animal!

They're found on every continent except Antarctica, and they live in some of the world's harshest environments: scorching deserts, drippy rainforests, wave-crashed beaches. Although most crawl on land, some even swim in the water.

Beetles eat nearly anything you can imagine — and some things you can't. Insects, plants, wood, dead animals, and even poop make it on their menu. Yuck!

They come in a variety of sizes. The world's smallest, a featherwing beetle from Colombia, is tinier than the period at the end of this sentence. The world's

largest, the titan beetle of Brazil, can grow as long as a grown-up's hand.

But you don't have to travel to South America to find fascinating beetles. An array of colors, shapes, and sizes are found here in the Show-Me State.

Turn to
page 12
to take a
look ...



Seven-spotted lady beetle



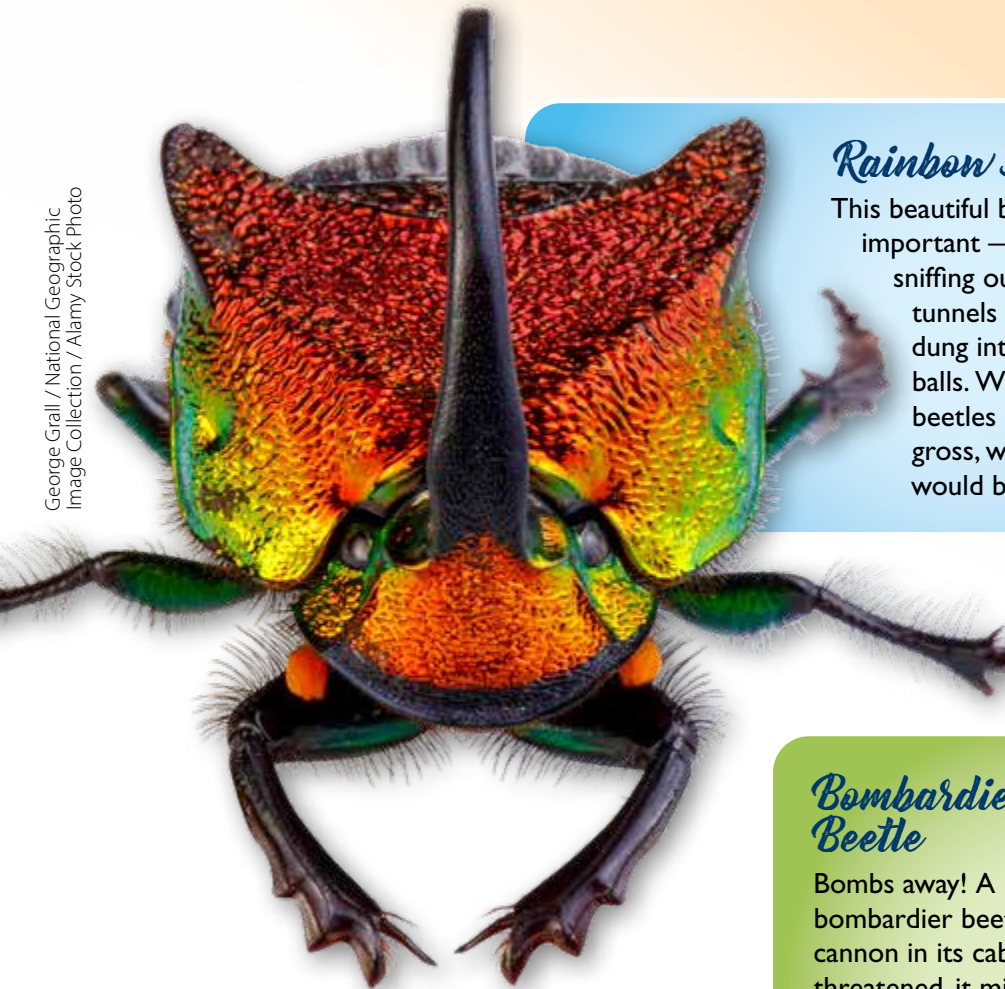
Fotodietrich | Dreamstime.com

What Makes a Beetle a Beetle?

Beetles are insects, like ants, grasshoppers, and dragonflies. Most insects share the same basic body plan. For example, they don't have bones. Instead, an armorlike shell called an exoskeleton supports their weight and protects their squishy insides. Their bodies are divided into three parts: a head, a thorax, and an abdomen. And they usually have six legs, four wings, and two antennae.

So how do you tell a beetle from other insects? The easiest way is to look at its back. A beetle's front wings are thick and hard. They're called elytra (*el-ih-trah*), and they form a **straight line** where they meet on the beetle's back. The back wings are thin and delicate. When the beetle wants to fly, it holds its elytra out of the way and flaps its back wings. When it wants to rest or walk, it folds its elytra over its back wings to protect them from harm.

Tiger beetle illustration: Steve Buchanan
Lady beetle flight: A & J Visage / Alamy Stock Photo



Rainbow Scarab

This beautiful beetle has an ugly — but important — job. Its antennae are good at sniffing out poop. When it finds a pile, it tunnels underneath, rolls some of the dung into balls, and lays eggs inside the balls. When the eggs hatch, the baby beetles eat the poop. Although it seems gross, without these beetles, the world would be a much stinkier place!



Tom Murray

Bombardier Beetle

Bombs away! A bombardier beetle has a cannon in its caboose. When threatened, it mixes up a cocktail of chemicals inside its abdomen. This causes an explosive reaction, like when you mix vinegar and baking soda. The chemicals spray out of the beetle's backside and burn any would-be attacker.

Giant Stag Beetle

Back off! When a male stag beetle finds a rotten log, he doesn't want to share it. So when two males meet, they lock their oversized jaws and try to push each other out of the way. The one who wins gets any female beetles who show up. And females get rotting wood in which to lay their eggs.



Karel Gallas / Dreamstime.com

Fiery Searcher

These shiny beetles are known as caterpillar killers — and for good reason. They hide under leaf litter during the day. At night, they crawl into the treetops to deliver murder and mayhem on any caterpillars they find. By eating leaf-munching pests like gypsy moths and tent caterpillars, fiery searchers keep forests healthy.



Sdbower | Dreamstime.com

Warty Leaf Beetle

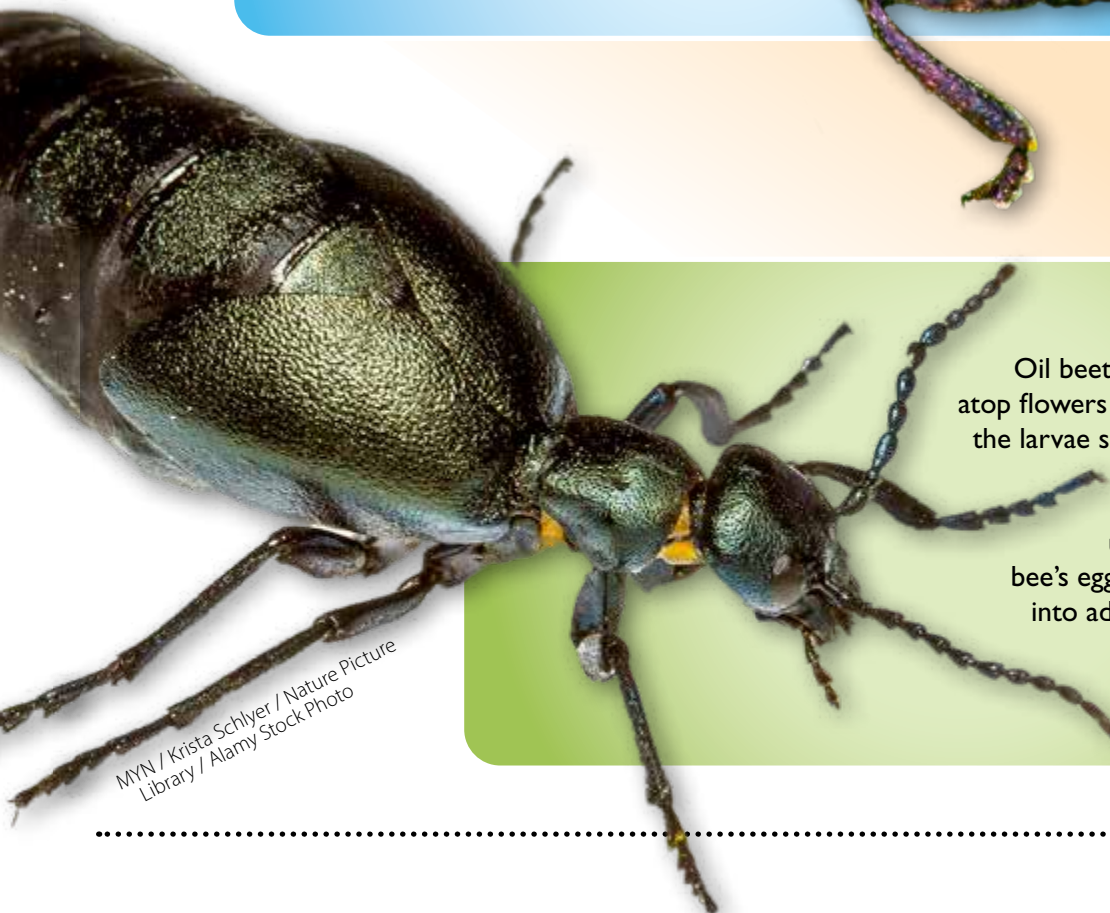
This tiny beetle is the same size, shape, and color as caterpillar poop, which is called frass. The beetle's frassastic disguise helps it hide in plain sight from birds and other predators that might try to eat it.



JustNatureChannel | Dreamstime.com

Oil Beetle

Oil beetle babies (aka larvae) wait atop flowers for bees. When one lands, the larvae scramble onto the bee and hitch a ride to the bee's nest. There, the unwelcome guests eat the bee's eggs and pollen as they grow into adult beetles. When handled, grown-up beetles release drops of oil that can blister your skin.



MYN / Krista Schlyer / Nature Picture Library / Alamy Stock Photo



Acorn Weevil

An acorn weevil's long snout is tipped with strong jaws. Female weevils use them to drill through acorn shells so they can lay eggs inside. When the eggs hatch, baby weevils eat the acorn meat. When the acorn drops off the tree, the weevils wobble out, burrow into the soil, and spend winter underground turning into adults.

Calligraphy Beetle

Beetles divide up nature so they don't compete with each other for food and space. Take calligraphy beetles for example. These beetles are named for the fancy markings on their wing covers. There are many kinds of calligraphy beetles — each with a unique wing pattern — but most prefer to eat a particular plant.

David Cappaert, Bugwood.org



American Burying Beetle

Life for an American burying beetle begins with an end. When a small animal dies, these beetles arrive. Working through the night, a male and female use their flat heads to bulldoze soil out from under the corpse. Once it's buried, the female lays eggs on top of it. When the eggs hatch, the parents chew up meat from the corpse and feed it to the baby beetles.

Banded Net-Wing

Is this a moth? Nope. With its large wings, this firefly-sized beetle isn't a fast flyer. But it doesn't need to worry about getting eaten. The bold orange-and-black bands on its wings warn would-be predators that the beetle tastes terrible.

Susan Ellis, Bugwood.org



Golden Tortoise Beetle

When it's angry, scared, or with a mate, this little leaf-muncher can change from golden to orange or red. Scientists think the beetle changes color to trick birds into thinking it's a ladybug. Apparently, birds find golden tortoise beetles yummy, but ladybugs yucky.



yusufkurnia / Shutterstock.com

Six-Spotted Tiger Beetle

For its size, this emerald-green beetle is one of the fastest animals on Earth. To catch prey, the six-spotted speedster boogies along at a blistering 125 body lengths per second. If a tiger beetle had legs as long as a human's, it could run more than 200 miles per hour!

David Cappaert, Bugwood.org



THIS
ISSUE:

TARANTULA VS SCORPION

Illustrated by
David Besenger

Hair-rows

Tarantulas sling arrow-sharp hairs off their bellies. The barbed bristles pepper an attacker's skin and eyes.

Venom Daggers

To eat, tarantulas stab their fangs into prey and then pump in venom to liquify the victim's insides.

Toxic Tail

To subdue prey or defend themselves, scorpions whip their stinger-tipped tails over their bodies and inject venom.

Perceptive Pincers

Sensitive hairs on a scorpion's pincers feel motion. If the spider zigs, the scorpion will feel when to zag.

AND THE WINNER IS...

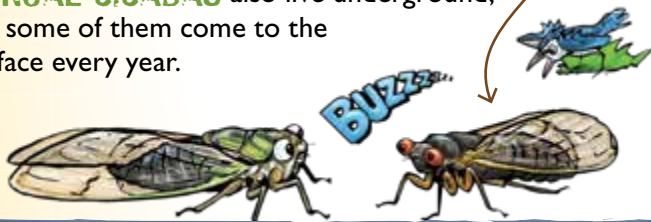
STRANGE but TRUE!

YOUR GUIDE TO ALL THE
UNUSUAL, UNIQUE,
AND **UNBELIEVABLE**
STUFF THAT GOES ON IN NATURE

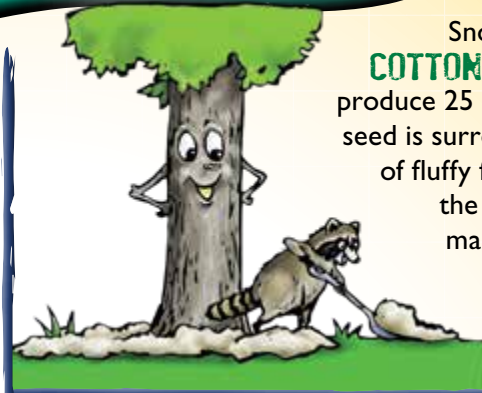
You'd better bring a sturdy umbrella! In rare cases, tornadoes suck up schools of **FISH** when they swirl over lakes and rivers. The fish blow around in the clouds for a while and then fall back to Earth, sometimes many miles away.



PERIODICAL CICADAS live underground for most of their lives. They crawl to the surface in overwhelming numbers every 13 or 17 years. **ANNUAL CICADAS** also live underground, but some of them come to the surface every year.

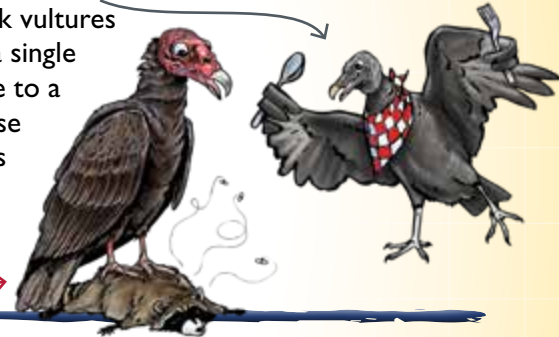


Bring the sting! **SUMMER TANAGERS** don't care. The brilliant birds love to eat bees and wasps. To avoid a stinging stomachache, they rub each bee against a branch to wipe off its stinger.

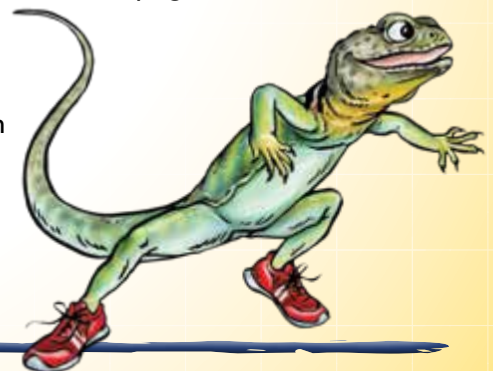


Snow in June? A large **COTTONWOOD TREE** can produce 25 million seeds. Each seed is surrounded by a tangle of fluffy fibers. Wind blows the seeds far from the mama tree, and when millions gather on the ground, it can look like snow.

TURKEY VULTURES have super sniffers that they use to find dead animals to dine on. **BLACK VULTURES** can't smell squat. To get food, black vultures often follow a single turkey vulture to a carcass and use their numbers to bully the other bird away.



When a **COLLARED LIZARD** needs to scurry in a hurry, it stands upright and runs on its hind legs, using its long tail for balance. The rapid reptiles can reach speeds of 15 mph — quick enough to catch prey or escape most predators.



Pushy peepers: To swallow big bites, a **FROG** blinks its eyes. During the blink, muscles pull the frog's huge eyeballs down into the roof of its mouth. The eyeballs squeeze food down the frog's throat. Gulp!



HOW TO

Make a Minnow Trap

HERE'S WHAT YOU NEED

- Two 2-liter plastic bottles
- Utility knife
- Hole puncher
- Parachute cord
- Crackers or bread for bait
- A grown-up to help handle the knife

Missouri's minnows come in a rainbow of colors, yet it's hard to get a good look at them. They swim away so fast! But catch a few fish in a minnow trap, and you can look at them as long as you like.

HERE'S WHAT YOU DO



RULES, RULES, RULES ...

To use your minnow trap — even if you're going to release the minnows right after you look at them — you need a Missouri fishing permit. You also have to label your trap with your name and address.

- 1** With help from a grown-up, cut off the top of a 2-liter plastic bottle. Make the cut about 6 inches down from the cap, where the bottle goes from being skinny to fat. Save the top of the bottle (the part with the cap), and recycle the rest.
- 2** Cut off about 3 inches from the bottom of the other bottle. Save the top of the bottle (the part with the cap), and recycle the rest.
- 3** Unscrew the cap from the piece you cut off in Step 1. Insert this piece into the bottom of the other bottle. The spouts of both bottles should point in the same direction.

- 4** Use a hole puncher to make a series of holes around the bottom edge of the bottles. Space the holes about 1 inch apart and 1 inch from the bottom edge of the bottles.

- 5** Thread parachute cord through all of the holes. Go up through a hole, over the edge of the bottles, back inside the bottles, and then up through the next hole. When you get all the way around to where you started, tie the two ends together and snip off the extra cord.

HERE'S HOW TO USE THE TRAP

Find a shady, quiet pool in a stream where you've seen schools of minnows. Gather a few handfuls of pebbles and drop them into the trap. These will keep it from floating away. Crumble up a cracker and drop some crumbs into the trap.

Place the trap in the water with the spout pointing downstream. You'll probably have to tilt it up so air inside can bubble out. You may need to stack rocks around the trap to hold it in place. Leave it alone for a few hours or even overnight. When you check it, be sure to lift it out of the water with the spout pointing down (so the water stays inside). Did you catch anything?

After you've gotten a good look at the minnows inside, be sure to release them. Hold the spout just above the water's surface and unscrew the cap. The water will drain out, taking the minnows with it.



XPLOR MOR

Float Trip Faux-Paws

There's no better way to spend a hot summer day than floating down a cool Ozark stream. But spending time on the river can turn dangerous if you don't follow a few commonsense safety rules. And we all know that nature should be cared for — not abused — so that other people can enjoy it, too.

These ornery raccoons are making a few faux pas, poor decisions, and dangerous blunders. Can you circle 13 things that you would do differently?



WHAT IS IT?

— FROM PAGE 3 —

the babies hang upside down on a stem and blow plant sap out their behinds. Gravity pulls the “spit” down over them. Eventually, they exit the foam as winged adults known as froghoppers. Learn more at mdc.mo.gov/field-guide.





Answers (from top left, clockwise): 1. Trees don't love it when people carve things into their trunks. 2. Look before you sit. Poison ivy might make your rest break awfully itchy. 3. "No Trespassing" means "Stay out!" 4. Chopping down live trees is illegal in many places and "unwelcoming" to others. 5. Diving into water is dangerous (and maybe deadly) if you don't know the depth or what's underneath. 6. Piling too much stuff in a canoe is a great way to make it flip. 7. Not wearing a life jacket when you're on the water is dangerous. 8. Standing up in a canoe is a good way to fall out. 9. Keep a close eye on campfires, or you might burn up your sneakers — or the forest. 10. Trash goes in a trash can, not a river. 11. Raccoons can drink straight from a stream. Humans should not. 12. Always look over your shoulder before you cast. You want to hook fish, not your buddy! 13. Nature is a masterpiece all by itself. Please don't paint over it.

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FREE TO MISSOURI HOUSEHOLDS

CRITTER CORNER

Dark-Sided Salamander



Jeffrey T. Briggler

This pretty amphibian lives in southeastern Missouri, except for in the Bootheel's lowlands. It hides under rocks near streams and springs in forested areas, where it eats insects and spiders. It can also live in caves. Because it's active mainly at night, you may never see it unless it has rained recently. Then, it may come out during the day. It can escape predators by using its tail for quick jumps. Learn more at mdc.mo.gov/field-guide.